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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/28/2004

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7590

08/15/2006

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EXAMINER

ROGERS, KELLY A

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 08/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N . 10/509,161	Applicant(s) TZUK ET AL.	
	Examiner Kelly A. Rogers	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20040928</u> . | 6) <input type="checkbox"/> Other: _____ |

Information Disclosure Statement

The information disclosure statement filed 28 September 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 5-7, 9, 10, 12, and 19 are rejected under 35 U.S.C. 102(e) as being taught by Miller et al. (6,385,220).

As to claim 1, Miller et al. teaches an apparatus comprising a diode-pumped, solid state laser comprising a lasing medium comprising at least one surface through which said laser is pumped, and at least one diamond plate in thermal contact with said at least one surface [figure 1 and column 3, lines 63-67 and column 4, lines 1-6 and column 5, lines 53-56].

As to claim 3, Miller et al. teaches at least a second diamond plate in thermal contact with a second surface of said lasing medium [figure 1, reference numbers 14 and 16 and column 3, lines 63-67 and column 4, lines 1-6].

As to claim 5, Miller et al. teaches said laser is end-pumped [figure 1].

As to claim 6, Miller et al. teaches a second diamond plate in thermal contact with a surface of said lasing material distant from that through which said laser is pumped [figure 1, reference number 16].

As to claim 7, Miller et al. teaches the lasing beam is output through said second diamond plate [figure 1, reference number 16].

As to claim 9, Miller et al. teaches an area of said at least one diamond plate that is in thermal contact with said at least one surface is optically polished [column 4, lines 29-32].

As to claim 10, Miller et al. teaches a layer of a thermal conductive material between said at least one surface and said at least one diamond plate [column 4, lines 21-25].

As to claim 12, Miller et al. teaches the location of said diamond plate is such that the direction in which said laser is pumped and the direction in which said laser is cooled are essentially co-linear [figure 1].

As to claim 19, Miller et al. teaches at least one diamond plate is anti-reflecting at the wavelength at which said laser is pumped [figure 2B. reference number 30 and column 4, lines 27-28].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (6,385,220).

As to claim 2, Miller et al. teaches at least one diamond plate is cooled remotely from the area of said thermal contact with said at least one surface [figure 3B and column 6, lines 8-15].

As to claim 17, Miller et al. teaches said lasing medium is Nd: YAG [column 6, lines 48-50].

As to claim 18, Miller et al. teaches said lasing medium is Nd: YVO4 [column 7, line 8].

Claims 4, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (6,385,220) as applied to claims 1, 2, and 10 above, and further in view of Meissner et al. (6,160,824).

As to claim 4, Miller et al. teaches all the characteristic features of the present invention as recited above.

However, Miller et al. fails to disclose at least one diamond plate being cooled by means of at least one of convection and conduction.

Meissner et al. teaches at least one diamond plate being cooled by means of at least one of convection and conduction [column 11, lines 39-42].

It would have been obvious to one of ordinary skill in the art to modify the system disclosed by Miller et al. by incorporating the feature disclosed by Meissner et al.

One would have been motivated to make this modification in order to remove heat as suggested by Meissner et al. [column 5, line 51].

As to claim 8, Miller et al. teaches all the characteristic features of the present invention as recited above.

However, Miller et al. fails to disclose said laser is side-pumped.

Meissner et al. teaches side-pumping [figures 1-16].

It would have been obvious to one of ordinary skill in the art to modify the system disclosed by Miller et al. by incorporating the feature disclosed by Meissner et al.

One would have been motivated to make this modification in order to direct or confine pumped radiation within a central region as suggested by Meissner et al. [column 6, lines 55-56].

As to claim 11, Miller et al. teaches all the characteristic features of the present invention as recited above.

However, Miller et al. fails to disclose said thermal conductive material has a refractive index that approximately matches a refractive index of said at least one diamond plate.

Meissner et al. teaches matching refractive indices [column 1, lines 61-63].

It would have been obvious to one of ordinary skill in the art to modify the system disclosed by Miller et al. by incorporating the feature disclosed by Meissner et al.

One would have been motivated to make this modification in order to create a symmetrical waveguide as suggested by Meissner et al. [column 1, line 63].

Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. as applied to claim 1 above, and further in view of Hargis et al. (6,101,201).

As to claim 13, Miller et al. teaches all the characteristic features of the present invention as recited above.

However, Miller et al. fails to disclose a plurality of segments of said lasing medium are disposed in proximity to each other, and said at least one diamond plate is disposed between two adjacent segments, and in thermal contact with said segments.

Hargis et al. teaches a plurality of segments of said lasing medium are disposed in proximity to each other, and said at least one diamond plate is disposed between two adjacent segments, and in thermal contact with said segments [figure 4, reference numbers 100 and 110 and column 5, lines 50-51].

It would have been obvious to one of ordinary skill in the art to modify the system disclosed by Miller et al. by incorporating the feature disclosed by Hargis et al.

One would have been motivated to make this modification in order to achieve a compact and reliable structure as suggested by Hargis et al. [column 1, line 39].

As to claim 15, Miller et al. teaches all the characteristic features of the present invention as recited above.

However, Miller et al. fails to disclose said laser is end-pumped through said plurality of segments and through at least one diamond plate.

Hargis et al. teaches said laser is end-pumped through said plurality of segments and through at least one diamond plate [figures 4, reference numbers 100, 110, and 430].

It would have been obvious to one of ordinary skill in the art to modify the system disclosed by Miller et al. by incorporating the feature disclosed by Hargis et al.

One would have been motivated to make this modification in order to achieve a compact and reliable structure as suggested by Hargis et al. [column 1, line 39].

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (6,385,220) in view of Hargis et al. (6,101,201) as applied to claims 1 and 13 above, and further in view of Meissner et al. (6,160,824).

As to claim 14, Miller et al., in combination with Hargis et al., teaches all the characteristic features of the present invention as recited above.

However, Miller et al. in combination with Hargis et al. fails to disclose said laser is side-pumped through at least one of said segments and essentially parallel to the plane of said at least one diamond plate.

Meissner et al. teaches side-pumping [figures 1-16].

It would have been obvious to one of ordinary skill in the art to modify the system disclosed by Miller et al. in combination with Hargis et al. by incorporating the feature disclosed by Meissner et al.

One would have been motivated to make this modification in order to direct or confine pumped radiation within a central region as suggested by Meissner et al.
[column 6, lines 55-56].

Allowable Subject Matter

Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 5,309,457 to Minch

U.S. Appl. No. 09/931,669 to Zheng

U.S. Pat. No. 6,683,901 to Caprara et al.

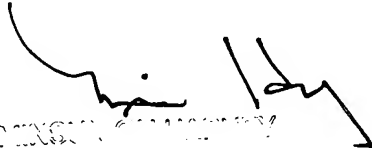
U.S. Pat. No. 6,130,902 to Shimoji

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly A. Rogers whose telephone number is 571-272-8047. The examiner can normally be reached on Monday through Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Art Unit 2828

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